

REMARKS

Below, the applicant's comments are preceded by related remarks of the examiner set forth in small bold type.

DETAILED ACTION

4. Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the state of the external signal line" in line 3. There is insufficient antecedent basis for those limitations in the claim.

...

Claim 9 recites the limitation "the state of an external signal line" in line 1. There is insufficient antecedent basis for those limitations in the claim.

...

Claim 17 recites the limitation "the state of an external signal line" in line 5. There is insufficient antecedent basis for those limitations in the claim.

Claims 1, 9, and 17 have been amended.

5. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bland et al. (Bland), U.S. patent no. 5,517,650 in view of Bacigalupo (Bacigalupo), U.S. patent no. 6,448,812.

Bland and Bacigalupo are prior art references cited in prior office action.

As per claim 1, Bland discloses a circuit [fig. 4] comprising:

a PAD signal line connectable to an external signal line [fig. 5, col. 6, line 62-col. 7, line 2];

a keeper stage to hold the PAD signal line in a weakly held state responsive to changes in a state of the external signal line [col. 7, lines 3-15].

Bland does not explicitly disclose a keeper stage to hold the PAD signal line in a weakly held state responsive to changes in a state of the external signal line that occur after a power down.

Bacigalupo discloses a keeper stage to hold the PAD signal line in a weakly held state responsive to changes in a state of the external signal line that occur after a power down [fig. 2; col. 4, lines 31-col. 5, line 26; col. 5, lines 46-56]. It would have been obvious to one of ordinary skill in the art at time the invention to combine the teachings of Bland and Bacigalupo because they are both directed to power management system, and the specify teachings of Bacigalupo stated above by having weak pull-up and pull-down devices to hold a signal line in a weakly held state would increase the power consumption of Bland system by being capable of controlling power management system.

...

As per claim 5, inherently, Bacigalupo discloses the control of the at least one controllable weak pull-up device comprises a logical NAND of a SLEEP signal and the PAD signal and the control of the at least one controllable weak pull-down device comprises a logical NOR of an inverted SLEEP signal and the PAD signal [col. 5, lines 27-61].

Bland does not disclose or suggest “a USB device to connect to a USB host,” as recited in amended claim 1. What Bland discloses is “[a] bridge for interfacing buses in a computer system having an industry standard architecture (ISA) bus and a peripheral controller interconnect (PCI) bus is coupled between the ISA and PCI buses.” (abstract)

Bland also does not disclose or suggest “the control of the at least one controllable weak pull-up device comprises a logical NAND of a SLEEP signal and a PAD signal on the PAD signal line, and the control of the at least one controllable weak pull-down device comprises a logical NOR of an inverted SLEEP signal and the PAD signal,” as recited in amended claim 1.

Bland discloses a “control logic” in FIG. 7, but does not disclose or suggest “a logical NAND of a SLEEP signal and a PAD signal” or “a logical NOR of an inverted SLEEP signal and the PAD signal.” If the examiner contends that the “I/O pad” signal in FIG. 7 of Bland corresponds to the “PAD signal line” of claim 1, then Bland does not disclose or suggest a logical NAND of a SLEEP signal and a signal on the I/O pad, or a logical NOR of an inverted SLEEP signal and the signal on the I/O pad.

What is lacking in Bland is also not disclosed or suggested in Bacigalupo, discloses a random access memory (col. 1, lines 21-30), but does not disclose or suggest “a USB device,” as recited in claim 1.

The applicant disagrees with the examiner’s assertion that Bacigalupo inherently discloses a logical NAND of a SLEEP signal and the PAD signal and, a logical NOR of an inverted SLEEP signal and the PAD signal, to control the weak pull-up and pull-down devices, respectively. Rather, Bacigalupo discloses a control logic 30 that operates according to a logic table, which discloses setting the control signals 32 and 34 based on the conditions of “normal_operation,” “pullup_function,” “pulldown_function,” “power_down,” “drive_last_value,” “inverted_last_value,” “hold_current_value,” and “current_value” (col. 5, lines 27-61).

Claim 9 is patentable for at least similar reasons as claim 1. Claims 2, 4, 6-8, 10, 12, 14-16, 28, and 29 are patentable for at least the same reasons as the claims on which they depend.

As to claims 17-20 and 23 are written in mean plus function and contained the same limitations as claims 1-8. Therefore, same rejection is applied.

Neither Bland nor Bacigalupo discloses or suggests "a processor [of the USB device] that, after the powering down, is awakened when the USB host drives the external line to change the weakly stored state of the PAD signal line," as recited in amended claim 17. The amendment to claim 17 is supported by page 6, lines 5-8 and Table 1 of the specification.

Both Bland and Bacigalupo disclose weakly holding a signal value on a signal line after powering down, but does not disclose or suggest a processor of a USB device that is awakened after the state of the same signal line (having the weakly held signal value) is changed.

Similarly, neither Bland nor Bacigalupo discloses or suggests "a processor that, after the powering down, is awakened when the external device changes the weakly stored state of the PAD signal line," as recited in amended claim 24.

Claims 18-23 and 25-27 are patentable for at least the same reasons as the claims on which they depend.

The applicant has added new claims 28-32, of which claim 30 is independent. Claim 30 is supported by page 6, line 12 to page 7, line 18 of the specification.

Enclosed is a \$200.00 check for excess claim fees and a \$120.00 check for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050, referencing attorney docket 10559-450001.

Respectfully submitted,

Date: 6/22/2005

Rex Huang
Rex I. Huang* for
David L. Feigenbaum, Reg. No. 30,378

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804
Telephone: (617) 542-5070
Facsimile: (617) 542-8906

** See attached document certifying that Rex Huang has limited recognition to practice before the U.S. Patent and Trademark Office under 37 CFR § 10.9(b).*